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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/750,590	12/31/2003	Bradley Nelson	AUS920030119US1	8597

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EXAMINER

SILVER, DAVID

ART UNIT	PAPER NUMBER
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2128

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/750,590	Applicant(s) NELSON ET AL.	
	Examiner David Silver	Art Unit 2128	

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14, 16-29 and 31-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14, 16-29 and 31-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 January 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>10/16/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-45 were originally presented for examination.
2. Claims 1-45 were rejected.
3. The Instant Action is in response to Reply filed 01/08/2007 ("Reply" or "Remarks").
4. Claims 15, 30, and 45 were cancelled and therefore withdrawn from consideration.
5. Claims 1-14, 16-29, and 31-44 are currently pending in Instant Application.
6. The Instant Application is not currently in condition for allowance.

Priority

7. Priority is not claimed (Effective Filing: 12/31/2003).

Information Disclosure Statement

8. The information disclosure statement(s) (IDS) submitted on 10/16/2006 is/are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement(s) is/are being considered if signed and initialed by the examiner.

Response to Arguments

Information Disclosure Statement

9. **Background:**

- 9.1 "In paragraph 2 of the present Office Action, the Examiner notes that an IDS had not been submitted as of the mailing date of the present Office Action." (Remarks: page 14)

10. **Applicants state:**

- 10.1 "Applicant filed an IDS on October 16, 2003." (Remarks: page 14)

11. **Examiner Response:**

- 11.1 It appears the Applicants are referring to the IDS submitted on 10/16/2006. An IDS was not received on 10/16/2003 as this Application was filed on 12/31/2003.

Response: Drawing / Claim Objections

12. Applicants are thanked for labeling the drawings and amending the claims in response to the objections. Therefore, the objections have been withdrawn.

Response: 35 USC 101

13. Background:

13.1 "In paragraph 8 of the present Office Action, Claims 6-11 and 31-45 are rejected under 35 U.S.C. § 101 as directed to non-statutory subject matter." (Remarks: page 12)

14. Applicants argue:

14.1 "In response, Applicant has amended Claim 6 to overcome the rejection by including the recitation "placing the simulation model in data storage," which provides a useful, tangible, and concrete result, namely, a simulation model for an electronic design residing in data storage.

14.2 "In addition, Applicant has amended each of Claims 31-45 to recite an apparatus rather than a "program product" to address the Examiner's concern that these claims are directed to software per se rather than one of the classes of statutory subject matter set forth in 35 U.S.C. § 101." (Remarks: page 12)

15. Examiner Response:

15.1 Regarding subsection 1 *supra*, Applicants' amendment is not sufficient to overcome the rejection. Specifically, the Specification (PGPUB paragraph 51) states "RAM 28 is a type of memory designed such that the location of data stored in it is independent of the content." Merely storing a result in memory is not sufficient to provide a concrete useful and tangible final result. Firstly, RAM is non-volatile therefore a question arises as to whether the result is concrete. Secondly, results stored in RAM are not considered tangible because they are not realized outside of the computer environment.

15.2 Regarding subsection 2 *supra*, Applicants' amendments are not sufficient to overcome the rejection. Specifically, claim 31 recites "[...] program code including: means for [...]". Code cannot comprise 'means' which is considered to be physical. Therefore it is asserted that the means is referring to software code, *per se*. A 35 USC 112 rejection is made below in the respective section. The preamble of the claim is not given patentable weight because the claim limitations do not require it for vitality clarity or life. Therefore, tangible computer useable medium is not given patentable weight. Thus, the claims remain drawn to non-statutory subject matter.

Claim Interpretation

16. Limitations drawn to allowing, enabling or making optional a function's performance does not further limit a claim. As such, any prior art not explicitly prohibiting the performance of the function inherently anticipates the limitation. See for example claim 1 which merely permits but does not necessitate that a user perform a step.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

17. Claims 6-11 and 31-44 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

- 17.1 In this instance, absent an explicit and deliberate definition in the specification that the product includes an appropriate medium or hardware elements, the claims are directed to software, *per se*. Note exemplary claim 31 which recites only software elements. Additionally, software, *per se*, is not considered concrete (MPEP 2106).

MPEP 2106 recites, in part:

"...USPTO personnel shall review the claim to determine it produces a useful, tangible, and concrete result. In making this determination, the focus is not on whether the steps taken to achieve a particular result are useful, tangible, and concrete, but rather on whether the *final* result achieved by the claimed invention is "useful, tangible, and concrete."

- 17.2 The method claims do not produce a useful, tangible, and concrete final result. The steps of the method claims do not produce a useful, tangible, and concrete result. They merely recite a software algorithm, *per se*, which, for example, does not display, store, or otherwise provide a useful tangible output. Note exemplary claim 6 which only recites software steps and does not produce a useful tangible and concrete final result. See MPEP 2106 [R-5] (partially recited above).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

18. Claims 1-14, 16-29, and 31-44 are rejected under 35 U.S.C. 112, second paragraph, as being **indefinite** for failing to particularly point out and distinctly claim the subject matter which applicant

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regards as the invention.

19. The independent claims recite "specifying [...] any storage elements that define functional operation".

The term "any storage elements" fail to specifically set the metes and bounds of the claim; thus, rendering the claim indefinite. This statement creates an ambiguity that requires clarification.

Specifically, does the phrase mean the inclusion of optional storage devices if any are needed, or does it refer to any type of storage element?

20. Claim 1 recites "storing said one or more HDL files". The claim is rendered indefinite by this limitation because the creation of the HDL files is not necessitated by the previous claim limitations. Thus, this limitation lacks antecedent basis for the HDL files when the optional steps are not performed.

21. Claims not specifically mentioned are rejected by virtue of their dependency.

22. The Applicants are required to fix all other similar occurrences of the above-cited deficiencies.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

- This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

23. 18. Claims 1-14, 16-29, and 31-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raimi (**USP 5,604,895**), and in view of Levin (**USP 4,821,178**).

Raimi discloses: 1. (currently amended) A method of specifying a trace array for a simulation model of an electronic design in a data processing system, said method comprising: permitting a user to specify specifying one or more design entities within a simulation model with one or more statements in one or more hardware description language (HDL) files, wherein specifying the one or more design entities

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includes specifying a plurality of signals, functional logic, and any storage elements that define functional operation of the electronic design (col: 7 line: 30-35; col: 5 line: 60-67; col: 30 line: 10-25); permitting a user to specify, in one or more statements in the one or more HDL files, an instrumentation entity that monitors at least one design entity among the one or more design entities but does not contribute to functional operation of the electronic design (col: 1 line: 64-67; col: 5 line: 1-19; col: 10; col: 16 line: 10-37); and storing said one or more HDL files (col: 3 line: 56 to col: 4 line: 17). Raimi however does not substantially disclose wherein specifying the instrumentation entity includes specifying a trace array within the instrumentation entity and indicating a monitored signal set including at least one signal among the plurality of signals, wherein the trace array concurrently stores multiple values for the monitored signal set obtained over multiple cycles of functional operation of the simulation model. Levin however discloses an analogous instrumentation / monitoring / tracing system having the said feature **(Levin: col: 3 line: 55-67; col: 3 line: 16-24)**. It would have been obvious to one of ordinary skill in the art <computer engineering / vlsi / circuit design / debugging> at the time of Applicant's invention to combine the references in order to facilitate faster storage of trace information. Such trace arrays enable the circuit to store the information for later retrieval and analysis. In fact, it appears that Raimi indeed uses trace arrays for the purpose of tracking information for a later use **(Raimi: col: 11 line: 20-28)**.

Raimi discloses: 2. (currently amended) The method of Claim 1, wherein said specifying a trace array comprises specifying a control signal among said plurality of signals, wherein a for which value of said monitored signal set is stored within the trace array only on those cycles of functional operation during which the control signal is asserted **(This is an inherent feature. The control signal correlates to the power input. When the power is asserted (provided) the values are stored.)**.

3. (currently amended) The method of Claim 1, wherein specifying a trace array comprises specifying an association between an enumerated value and a value of the at least one signal comprising said monitored signal set (col: 10 line: 42 to col: 11 line: 11).

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4. (currently amended) The method of Claim 1, wherein said specifying said trace array comprises specifying a particular type for the trace array among a plurality of different types of trace arrays said trace array in one or more statements within an HDL file declaring an instrumentation entity containing the trace array (**Levin: col: 3 line: 55-67; col: 3 line: 16-24**). The motivation is identical to the one provided *supra*.

5. (currently amended) The method of Claim 1, wherein said specifying said trace array comprises specifying said trace array within an HDL file declaring a design entity (**col: 7 line: 30-35; col: 5 line: 60-67; col: 30 line: 10-25**).

As per claims 6-11, 16-26, and 31-41 note the rejection of claims 1-5 above. The Instant Claims recite substantially same limitations as the above-rejected claims and therefore rejected under same prior-art teachings.

As per claims 12-14, 27-29, and 42-44, note the rejection of claims 1-5 above. The Instant Claims recite substantially same limitations as the above-rejected claims and therefore rejected under same prior-art teachings but for

a simulator running a testcase against a simulation model of the electronic design (**col: 4 line: 24-30; col: 5 line: 45-67**).

Conclusion

24. All claims are rejected.

25. The Instant Application is not currently in condition for allowance.

26. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from

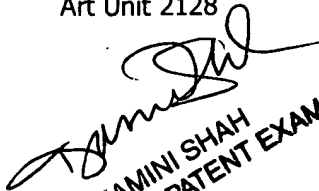
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the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Silver whose telephone number is (571) 272-8634. The examiner can normally be reached on Monday thru Friday, 10am to 6:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached on 571-272-2279. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David Silver
Patent Examiner
Art Unit 2128



KAMINI SHAH
SUPERVISORY PATENT EXAMINER